Amendment to the Claims

The Listing of Claims below will replace all prior versions and listing of claims in the application.

Listing of the Claims

Claims 1-90 (Cancelled)

91. (Currently Amended) A printing sheet for offset printing, comprising a fibrous paper web substrate and, on ~~at least one~~ both sides of the substrate, an image receptive coating layer with a cumulative porosity volume of pore widths below 200nm as measured using nitrogen intrusion methods of more than 0.006 cm^3 per gram paper, wherein the image receptive coating layer comprises a top layer comprising:

a pigment part, wherein this pigment part is comprising,

a) 50 to 100 parts in dry weight of a fine particulate carbonate with a particle size distribution such that more than 80 % of the particles are smaller than 1 µm,

b) 0 to 50 parts in dry weight of a fine particulate kaolin with a particle size distribution such that more than 90 % of the particles are smaller than 1 µm,

c) 0 to 20 parts or up to 30 parts in dry weight of a particulate polymer pigment with a particle size distribution such that more than 90 % of the particles are smaller than 0.5 µm,

and a binder part, wherein this binder part comprises:

a') less than 16 parts in dry weight of binder, and

b') less than 2 parts in dry weight of additives

and wherein

the image receptive coating layer has a second layer beneath said top layer consisting of:

a pigment part, wherein this pigment part consists of

A) 50 to 100 parts in dry weight of a fine particulate carbonate with a particle size distribution such that more than 80 % of the particles are smaller than 1 µm,

B) 0 to 50 parts in dry weight of a fine particulate kaolin with a particle size distribution such that more than 50 % of the particles are smaller than 1 µm, or alternatively 0 to 50 parts in dry weight of a fine particulate carbonate with a particle size distribution such that more than 70% of the particles are smaller than 1 µm,

and a binder part, wherein this binder is composed of:

A') less than 20 parts in dry weight of binder and

B') less than 4 parts in dry weight of additives.

92. (Previously Presented) Printing sheet according to claim 91, wherein the cumulative porosity volume of pore widths below 200 nm is more than 0.008 cm^3 per gram paper.

93. (Currently Amended) Printing sheet according to claim 92, wherein the surface of the image receptive layer is ~~substantially~~ non-polar.

94. (previously presented) Printing sheet according to claim 93, wherein the polar part of the surface energy of the surface of the image receptive layer is less than 7 mN/m, as determined by contact angle measurements at a Parker Print Surf (PPS) surface roughness of between 0.8 and 1 µm.

95. (Previously Presented) Printing sheet according to claim 94, wherein the polar part of the surface energy of the surface of the image receptive layer is more than 4 mN/m.

96. (Previously Presented) Printing sheet according to claim 91, wherein it has a gloss on the surface of the image receptive coating of more than 75 % according to TAPPI 75deg.

97. (Previously Presented) Printing sheet according to claim 91, wherein it has a gloss on the surface of the image receptive coating of more than 50 % according to DIN 75deg.

98. (Canceled)

99. (Previously Presented) Printing sheet according to claim 91, wherein it has a specific volume of more than 0.8 cm^3/g.

100. (Previously Presented) Printing sheet according claim 91, wherein it has an ink set-off of less than 0.3 at 30 secs.

101. (Currently Amended) Printing sheet according to claim 91, wherein the image receptive coating layer comprises a top layer comprising:

a pigment part, wherein this pigment part is composed of

a) 50 to 100 parts in dry weight of a fine particulate carbonate with a

particle size distribution such that ~~approximately~~ 90 % of the particles are smaller than 1 µm,

b) 0 to 50 parts in dry weight of a fine particulate kaolin with a particle size distribution that more than 95 % of the particles are smaller than 1 µm,

c) 0 to 20 parts in dry weight of a particulate, solid or vacuolated polymer pigment with a particle size distribution such that more than 90 % of the particles are smaller than 0.5 µm,

and a binder part, wherein this binder part is composed of:

a') less than 16 parts in dry weight of binder and

b') less than 2 parts in dry weight of additives.

102. (Currently Amended) Printing sheet according to claim 101, wherein pigment part of the top layer comprises

a) 60 to 100 parts in dry weight of a fine particulate calcium carbonate with a particle size distribution such that ~~approximately~~ 90 % of the particles are smaller than 1 µm,

b) 10 to 40 parts in dry weight of a fine particulate kaolin with a particle size distribution such that 95 % of the particles are smaller than 1 µm,

c) 10 to 15 parts in dry weight of a solid particulate polymer pigment with a particle size distribution centred at approximately 0.13 to 0.17 µm, wherein 95 % of the particles are located within +/- 0.03 µm of this mean particle size.

103. (Previously Presented) Printing sheet according to claim 102, wherein the solid particulate polymer pigment (c) is selected from the group consisting of: poly(2-chloroethyl methacrylate), poly(isopropyl methacrylate), poly(phenyl methacrylate), polyacrylonitrile, polymethacrylonitrile, polycarbonates, polyetheretherketones, polyimides, acetals, polyphenylene sulfides, phenolic resins, melamine resins, urea resins, epoxy resins, polystyrene latexes, polyacrylamides, and alloys, blends, mixtures and derivatives thereof.

104. (Previously Presented) Printing sheet according to claim 102, wherein the solid particulate polymer pigment (c) is poly(methyl-methacrylate).

105. (Previously Presented) Printing sheet according to claim 102, wherein the solid particulate polymer pigment (c) is based on styrene maleic acid copolymeric latexes (SMA) and/or styrene malimide copolymeric latexes (SMI).

106. (Previously Presented) Printing sheet according to claim 105, wherein the solid particular the polymer pigment (c) is based almost exclusively on styrene malimide copolymeric latexes (SMI) with glass transition temperatures in the range of 200°C.

107. (Currently Amended) Printing sheet according to claim 102, wherein the binder part of the top layer comprises

a') a binder selected from the group consisting of styrene-butadiene latex, styrene-butadiene-acrylonitrile latex, styrene-acrylic latex, styrene-

butadiene-acrylic latex, starch, polyacrylate salt, polyvinyl alcohol, soy, casein, carboxymethyl cellulose, hydroxymethyl cellulose and mixtures thereof,

b') ~~additives like~~ an additive selected from the group consisting of defoamers, colorants, brighteners, dispersants, thickeners, water retention agents, preservatives, crosslinkers, lubricants and pH control agents.

108. (Previously Presented) Printing sheet according to claim 107, wherein the binder is an acrylic ester copolymer based on butylacrylate, styrene and acrylonitrile.

109. (Previously Presented) Printing sheet according to claim 107, wherein 10 to 16 parts in dry weight of binder (a') is present in the binder part.

110. (Previously Presented) Printing sheet according to claim 101, wherein the top layer has a total dried coat weight of in the range of 3 to 25 g/m^2.

111. (Previously Presented) Printing sheet according to claim 101, wherein the image receptive coating layer has a second layer beneath said top layer comprising:

a pigment part, wherein this pigment part is composed of

A) 50 to 100 parts in dry weight of a fine particulate carbonate with a particle size distribution such that approximately 90 % of the particles are smaller than 1 µm,

B) 0 to 50 parts in dry weight of a fine particulate kaolin with a particle size distribution that more than 60 % of the particles are smaller than 1

μm, or alternatively of a fine particulate carbonate with a particle size distribution such that more than 70% of the particles are smaller than 1 μm,

and a binder part, wherein this binder is composed of:

A') less than 20 parts in dry weight of binder and

B') less than 4 parts in dry weight of additives.

112. (Currently Amended) Printing sheet according to claim 102, wherein the image receptive coating layer has a second layer beneath said top layer comprising:

a pigment part, wherein this pigment part is composed of

A) 50 to 100 parts in dry weight of a fine particulate carbonate with a particle size distribution such that ~~approximately~~ 90 % of the particles are smaller than 1 μm,

B) 0 to 50 parts in dry weight of a fine particulate kaolin with a particle size distribution that more than 60% of the particles are smaller than 1 μm, or alternatively of a fine particulate carbonate with a particle size distribution such that more than 70% of the particles are smaller than 1 μm,

and a binder part, wherein this binder is composed of:

A') less than 20 parts in dry weight of binder and

B') less than 4 parts in dry weight of additives.

113. (Previously Presented) Printing sheet according to claim 111, wherein the pigment part of the second layer comprises

A) 70 to 90 parts in dry weight of a fine particulate calcium carbonate with a particle size distribution such that approximately 90% of the particles

are smaller than 1 µm,

B) 20 to 40 parts in dry weight of a fine particulate kaolin with a particle size distribution such that 65% of the particles are smaller than 1 µm or alternatively 50 to 70 parts of a fine particulate carbonate with a particle size distribution such that more than 70% of the particles are smaller than 1 µm.

114. (Currently Amended) Printing sheet according to claim 111, wherein the binder part of the second layer comprises

A') a binder selected from the group consisting of latex, in particular styrene-butadiene, styrene-butadiene-acrylonitrile, styrene-acrylic, styrene-butadiene-acrylic latexes, starch, polyacrylate salt, polyvinyl alcohol, soy, casein, carboxymethyl cellulose, hydroxymethyl cellulose and mixtures thereof,

B') ~~additives like~~ an additive selected from the group consisting of defoamers, colorants, brighteners, dispersants, thickeners, water retention agents, preservatives, crosslinkers, lubricants and pH control agents.

115. (Previously Presented) Printing sheet according to claim 114, wherein the binder is an acrylic ester copolymer based on butylacrylate and styrene.

116. (Previously Presented) Printing sheet according to claim 111, wherein 6 to 20 parts in dry weight of binder is present in the binder part (A') of the second layer.

117. (Previously Presented) Printing sheet according to claim 111, wherein the second layer has a total dried coat weight of in the range of 5 to 25 g/m^2.

118. (Previously Presented) Printing sheet according to claim 111, wherein beneath the second layer there is a third layer which is composed of:

a pigment part, wherein this pigment part is composed of

AA) 50 to 100 parts in dry weight of a particulate carbonate with a particle size distribution such that more than 70 % of the particles are smaller than 1 µm,

and a binder part, wherein this binder is composed of:

AA') less than 10 parts in dry weight of binder and

BB') less than 4 to 6 parts in dry weight of additives.

119. (Previously Presented) Printing sheet according to claim 91, wherein its total weight is in the range of 90 or 100 to 250 g/m^2 or up to 400 g/m^2.

120. (Canceled)

121. (Withdrawn) A method of manufacturing a printing sheet according to claim 91 comprising:

cc) applying a second layer on a substrate, consisting of:

a pigment part, wherein this pigment part consists of

A) 50 to 100 parts in dry weight of a fine particulate carbonate with a particle size distribution such that more than 80% of the particles are smaller than 1 µm,

B) 0 to 50 parts in dry weight of a fine particulate kaolin with a particle size distribution such that more than 60% of the particles are smaller than 1 µm, or alternatively 0 to 50 parts in dry weight of a fine particulate carbonate with a particle size distribution such that more than 70% of the particles are smaller than 1 µm,

and a binder part, wherein this binder is composed of:

A') less than 20 parts in dry weight of binder and

B') less than 4 parts in dry weight of additives

dd) applying an image receptive top layer onto said second layer said top layer comprising:

a pigment part, wherein this pigment part is comprising

a) 50 to 100 parts in dry weight of a fine particulate carbonate with a particle size distribution such that more than 80 % of the particles are smaller than 1 µm,

b) 0 to 50 parts in dry weight of a fine particulate kaolin with a particle size distribution such that more than 90 % of the particles are smaller than 1 µm,

c) 0 to 20 parts or up to 30 parts in dry weight of a particulate polymer pigment with a particle size distribution such that more than 90 % of the particles are smaller than 0.5 µm,

and a binder part, wherein this binder part is composed of:

a') less than 16 parts in dry weight of binder and

b') less than 2 parts in dry weight of additives

ee) drying the image receptive coating layer, and

ff) calendaring at a nip pressure of less than 200 N/mm at a temperature of less than 80 degrees Celsius.

122. (Withdrawn) A method according to claim 121, wherein the top layer has a total dried coat weight of in the range of 3 to 25 g/m^2.

123. (Withdrawn) A method according to claim 121, wherein the second layer comprises:

a pigment part, wherein this pigment part is composed of

A) 50 to 100 parts in dry weight of a fine particulate carbonate with a particle size distribution such approximately 90% of the particles are smaller than 1 µm,

B) 0 to 50 parts in dry weight of a fine particulate kaolin with a particle size distribution such that more than 70% of the particles are smaller than 1 µm,

and a binder part, wherein this binder is composed of:

A') less than 20 parts in dry weight of binder and

B') less than 4 parts in dry weight of additives

124. (Withdrawn) A method according to claim 123, wherein the second layer has a total dried coat weight of in the range of 5 to 25 g/m^2.

125. (Withdrawn) A method according to claim 121, wherein prior to the application of the second layer

bb) a third layer is applied on the substrate, said third layer beneath said second layer comprising:

AA) 50 to 100 parts in dry weight of a particulate carbonate with a particle size distribution such that more than 70 % of the particles are smaller than 1 µm,

and a binder part, wherein this binder is composed of:

AA') less than 10 parts in dry weight of binder and

BB') less than 4 to 6 parts in dry weight of additives.

126. (Withdrawn) A method according to claim 125, wherein prior to the application of the third layer a sizing layer is applied to the substrate.

127. (Withdrawn) A method according to claim 121, wherein the image receptive coating is applied on both surfaces of the substrate.

128. (Withdrawn) A method according to claim 121, wherein the resulting printing sheet has a total weight in the range of 80 to 400 g/m^2.

129. (Withdrawn) A method according to claim 121, wherein in the calendering step (ff) a nip pressure of in the range of 60 to 150 N/mm is being used.

130. (Withdrawn) A method according to claim 121, wherein in the calendering step (ff) a temperature of in the range of 45 to 80 degree Celsius.

131. (Withdrawn) A method according to claim 121, wherein 4 nips or less are being used in the calendering step (ff).

132. (Withdrawn) A method according to claim 121, wherein in the calendering step (ff) rolls of steel or fibre surface are being used at a speed of 300 to 1000 m/min.

133. (Withdrawn) A method according to claim 121, wherein prior to the calendering (ff) of the printing sheet is dried to a moisture of less than 5%.

134. (Withdrawn) Method of using a printing sheet according to claim 91 in an offset printing process.